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ABSTRACT

This paper reports findings of a study that is grounded in the assumption that the ways in which teachers interact outside their classrooms may be critical to the future of school restructuring and the effects of restructuring on students. The paper develops a framework for analyzing professional community within schools, examines school characteristics that support the development of professional community, and evaluates the consequences of professional community for the responsibility teachers take for student learning. Data were collected during 1991-94 from 8 elementary, 8 middle, and 8 high schools across the United States that demonstrated progress in organizational restructuring. Methods included onsite visits and a teacher survey that elicited 910 responses. The response rate ranged from 69 to 100 percent across the schools. Two-stage path analysis and hierarchical linear modeling (HLM) were used to analyze the data. The data suggest that teachers' working conditions--the individual's job satisfaction and the school's sense of professional community--are a primary factor associated with responsibility for student learning. The findings also suggest that most national, state, and local policies designed to increase teachers' job performance are misdirected. Finally, the data indicate that professional development is less important in producing professional community--and therefore, responsibility for student learning--than changing the climate and culture of the school. Six tables and five figures are included. Appendices contain a description of variable construction and the stages of statistical analysis. (LMI)

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TEACHERS' PROFESSIONAL COMMUNITY IN RESTRUCTURING SCHOOLS

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INTRODUCTION

Teachers' work is often assumed to occur almost exclusively within the confines of a single room -- instruction in interaction with pupils. While the classroom is the dominant setting for teachers' daily professional life, and also the focus of teachers' energies and concerns, it is not the only context for their work (McLaughlin, 1993). The school's organization and the other faculty members and administrators who comprise the school staff create a larger context, which, at minimum, influences teachers' professional satisfaction. Studies of the relationship of school context to teachers' work suggest that the role of interpersonal and structural conditions will also affect the impact that teachers have on their students (see, for example, Lee, Dedrick, & Smith, 1991; Rosenholz, 1989).

Nonetheless, relatively few studies of teachers focus on their work life outside of the classroom. What is true in research is also a reflection of practice. Attending primarily to the work of teachers within classrooms, schools -- restructuring as well as traditional -- all too often ignore the needs of teachers for sustained professional contact with colleagues (Louis & King, 1993). Increasingly, both researchers and policy analysts argue that teacher professionalism must increase if education is to improve. While individual professionalism is desirable, active work in a professional group is important to increasing not only teachers' sense of craft, but their overall commitment to work contexts that are increasingly difficult and demanding. Not just the professional standards of individuals need to be supported, but also the development of professional community -- teachers' engagement in sustained collective effort with other teachers (Kruse & Louis, 1993a; Lieberman, 1990; Little & McLaughlin, 1993).

The research reported in this paper, based on survey data collected from over 900 teachers in 24 restructuring elementary, middle, and high schools, is grounded in the assumption that how teachers interact when they are not in their classrooms may be critical to the future of school restructuring and to the effects of restructuring on students. Our investigation lays out a framework

for analyzing professional community within schools. We examine school characteristics that support the development of professional community, and we evaluate the consequence of professional community for the responsibility teachers take for student learning. In our discussion we draw on case study data available from the same restructuring schools to interpret our findings.

ANALYTIC FRAMEWORK

Figure 1 depicts the model that we investigate in this study. Grouped on the left of the figure are four sets of constructs that represent features of schools. Among them, the focal organizational characteristic, teachers' professional community, is in bold outline. Grouped on the right are characteristics pertaining to the teachers within these schools. The outcome of interest, teachers' responsibility for student learning, is also in bold outline. Two contextual constructs typifying schools are hypothesized to influence the responsibility teachers take for student learning -- a cultural context arising from school demographic characteristics (i.e., the context is assumed to differ according to school grade level and to the proportion of female faculty); and, primarily, a cultural context deriving from school organization, represented by teachers' professional community. Two constructs represent school features hypothesized to facilitate professional community -- school structural conditions (size, staffing complexity, planning time, governance time, and teacher empowerment) and the human and social resources of the school (supportive principal, openness to innovation, respect, feedback from parents and colleagues, and staff development). While we focus on the influence of school-based constructs on teachers' responsibility for student learning, we take into account characteristics of teachers that may affect the responsibility they assume for student learning -- gender, teaching an academic subject, years of experience (including a quadratic term to capture a possible curvilinear relationship between years of teaching and the outcome), and teachers'

satisfaction with teaching at their present school.

In the remainder of this section we will discuss the concepts underlying each of the major components of the model.

The Elements of School-Wide Professional Community

Professional communities are identified by movement toward five elements of practice -- reflective dialogue, de-privatization, focus on student learning, collaboration, and shared values (Kruse & Louis, 1993a). These elements do not constitute a hierarchy. In fact, to develop true professional community, schools need to begin with minimal levels of each of the elements. The presence or absence of these five elements provides a method for distinguishing a professional school-wide community from other less professional forms of school cultures.

Reflective dialogue. Reflective practice implies self-awareness about one's work as a teacher. By engaging in mutual reflection, teachers can work together to puzzle out the assumptions basic to quality practice. Public conversation concerning the school and practice within the school may focus itself on the academic, curricular, and instructional concerns of schooling as well as on issues of student development and progress (Zeichner & Tabachnick, 1991). Collaboration, following reflection upon practice, leads to deepened understandings of the process of instruction and the products created within the teaching and learning acts.

Deprivatization of practice. In professional communities teachers can share and trade-off the roles of mentor, advisor, or specialist when aiding and assisting peers (Lieberman, Saxl, & Miles 1988; Little, 1990). It is within these relationships that teachers work to define and develop their own practice and control their own work in public, de-privatized ways. Peer coaching relationships, teamed teaching structures, and structured classroom observations, have long been accepted by many restructured schools as a method to improve both classroom practice and collegial relationships.

Collective focus on student learning. A sustained and undeviating focus on student learning can be considered a core characteristic of professional community. Teachers' professional actions must focus on choices that affect students' opportunity to learn and provide substantial student benefit (Abbott, 1991; Darling-Hammond & Goodwin, 1993; Darling-Hammond & Snyder, 1992; Little, 1990). Teachers engaged in a collective focus on student learning spend great amounts of time discussing instruction and curriculum in ways that promote individual student growth, development, and engagement in the core issues of a lesson, rather than focusing on activities or strategies that may be fun but, in the end, unproductive as learning tools.

Collaboration. Collaboration, the sharing of expertise, is fostered within professional communities. Faculty call on one another to discuss the development of practice and process skills related to the implementation of practice (Little, 1990). Collaborative efforts are utilized to create shared understandings from complex and confusing data, as well as to enhance the community in which the members work. Collaborative work increases teachers' sense of affiliation with each other, with the school, and their sense of mutual support and responsibility for the effectiveness of instruction (Louis, 1992).

Shared norms and values. Professional communities have a basis in moral authority that is derived from the central social importance of teaching and socializing children. Members of the organization need to affirm, through language and action, their common belief in values concerning assumptions about children, learning, teaching and teacher's roles, the nature of human needs, human activity, and human relationships and the organization's extended role in society and the organization's relationship with the surrounding environment (Giroux, 1988; Schein, 1985).

Factors Supporting School-Wide Professional Community

Our previous case study research has found that several conditions are necessary to support

the creation of strong professional communities (Kruse & Louis, 1993b). The design of the school as a work setting can create an environment that fosters professional community as opposed to friendly but less professional school culture. Structural conditions such as time to meet and talk, school size, and teacher involvement in school decisionmaking can create interdependence among teachers related to classroom practice and foster interdependence elsewhere in the school. Thus, the environment supports strong internalized connections among teachers as they engage in academic work. In addition to such structural factors, development of professional community requires several preconditions related to human resources. Included are openness to improvement, trust and respect, adequate cognitive and skill base, constructive feedback on teaching, and supportive leadership. The importance of this research is argued convincingly by Bryk and his colleagues as significantly related to the social capital of the school setting (Bryk & Driscoll, 1988; Bryk, Lee, & Holland, 1993; Bryk & Rollow, 1993). Working in concert, structural conditions and human and social resources provide the foundations of professional community.

Structural Conditions

Time to meet and talk. Research on school effectiveness and school change suggests that time is necessary to implement change agendas and essential to maintain innovation (Louis, 1992; Raywid, 1993). For professional community to grow, time must be allotted for teachers to work in two distinctly different ways -- as teaching teams and as a full faculty. Teaching teams require time to meet on a daily basis to address issues related to instruction and specific student concerns. The full faculty need time to come together regularly around issues that they find meaningful and directly related to school-wide goals and values.

Size. School size, some have argued, may negatively affect the possibility of creating of strong school-wide communities for teachers and students (Richmond, 1992; Sizer, 1984). Larger

schools, created with economy of scale as the foremost concern, create situations deleterious to the fostering of cohesive social and academic relationships among faculty (Williams, 1990). Sizer (1992) asserts that "small is better" as schools work toward cultivating more cohesive approaches to school-wide issues of concern. However, as Little (1993) in her work studying full and parttime high school faculty suggests, cohesion is more a product of shared images of teachers' roles and purposes rather than simply an issue of school size. Thus, although size can be considered a structural factor related to the development of school-wide community other school climate and culture issues may mitigate the impact of school size on the creation of professional community.

Teacher empowerment and school autonomy. Professional communities are distinguished by school-based autonomy from a centralized bureaucratic structure, favoring instead more flexible arrangements, e.g., site-based management and school-based decision making. Decentralized conceptions of governance suggest that the school is a complex integrated system directed toward a set of shared goals in which alternative problem re-solving methods and processes are part of daily sense-making activities. Individual autonomy to act, as a member of a larger school community, frees teachers to decide what is the best practice, given their classroom situation. Teachers exercise empowerment, when working as teams or individually, by determining aappropriate responses to unique problems. Thus, teachers are freed to consider the physical and social growth and development of their students when implementing school-wide policy.

Human and Social Resources

Openness to innovation. Openness to innovation within the school community is important to ensure an atmosphere in which risk-taking, improvement and development can occur. Teachers in restructured schools report that risk-taking must be supported if lasting serious change is to be sustained (Louis, 1992). Policy related to school change efforts needs to reflect an appreciation of

those willing to implement innovations. If teachers are to begin the process of understanding their teaching, making informed changes in and reflecting upon their practice, the teaching context must be structured as to support risk.

Trust and respect. Trust and respect, from colleagues both inside the school and the relevant external communities, are necessary conditions for developing commitment of teachers toward issues related to professional community (Firestone & Rosenblum, 1988; Louis, 1992). In the school setting, respect refers to the honoring of the expertise of others, while trust refers more to the quality of interpersonal relations. Interpersonal relationships are supported by open communication networks, designed around issues of academic knowledge and instructional skills. While trust in teachers' abilities, talents, and classroom efforts is necessary to begin school restructuring, trust and respect become outcomes of such processes as well. Once present in the school site, trust and respect act as facilitators of the community building process (Hargreaves, 1992; Lieberman, Saxl & Miles, 1988).

Cognitive and skill base. Professional community must be based on effective teaching, which is, in turn, based on the intellectual and practical grasp of the knowledge base and skills underlying the field. Creation of structures, e.g., collaborative peer coaching and coordinated inservice opportunities, that support individual growth and the development of teachers' knowledge and skills may act in concert with supportive leadership to mediate existing poor performance. By working to understand and address intricacies of content and practice, teachers create and extend school-based expertise. Thus, the practice of teaching becomes understood, generated through development, and enhanced through innovation (Brown & Duguid, 1991) in schools with strong cognitive and skill bases. Subsequently, teacher collaboration can be used to construct new knowledge as richer and more complex problems are resolved.

Supportive leadership. Supportive leadership is necessary for a professional community to

emerge. Leadership, exercised by principals or site-based teams, needs to focus efforts on issues related to school improvement -- collegiality, shared purpose, continuous improvement, accountability and responsibility for performance and structural change (Fullan, 1992). Objective rewards for improved performance are critical tools for the school leader working toward the development of professional community. Such rewards should be closely tied to school values and vision. Leaders who act as "keepers of the vision" and who are able to identify and reward actions that further the vision and mission of the school are crucial for organizational innovation. They act as a constant source of relevant information on how to deviate from the existing culture in which they are embedded. As school leaders work toward building new cultures, coherence and unity can be created. Thus, within the community a sense of internal quality for innovative efforts is established (Vandenberghe & Staessens, 1991).

Professional Community and Teachers' Responsibility for Student Learning

Although taking responsibility for student learning may be thought of as an obligation inherent to the profession of teaching and a characteristic of good professional practice, the notion has received little research attention. Perhaps because responsibility for student learning is assumed to be such a fundamental attribute of teachers, the implications of its variation have been ignored. Since student achievement is not an inevitable product of instruction, it is reasonable to expect that where teachers take more responsibility for student learning, student achievement will be higher. In a recent study, Lee and Smith (1994) documented a strong positive link between this attribute of teachers (aggregated to the school level and operationalized as collective responsibility for student learning) and student outcomes -- specifically, gains in engagement and in achievement for mathematics, reading, history, and science.

Despite its being a recent research focus, teacher responsibility for student learning is

grounded in two more familiar notions -- teacher efficacy (see, for example, Ashton & Webb, 1986; Rosenholz & Simpson, 1990) and teacher expectancy (see, for example, Rosenthal and Jacobsen, 1968; Raudenbush, 1984). Teacher efficacy, the sense of being effective in reaching students and affecting their school experience, assumes responsible agency on the part of teachers. The work of Ashton and Webb (1986), furthermore, has indicated that teachers' sense of efficacy is related to student achievement. Teacher expectations for students, i.e., their beliefs in students' ability to learn, have also proven to influence student academic performance (Cooper & Tom, 1984; Raudenbush, 1984).

In schools where teacher professional community is strong, we submit, teachers will take greater responsibility for student learning than in less collaborative environments. Lee and Smith (1994) report a positive relationship between staff collaboration and responsibility for student learning. In an analysis of survey data from eight restructuring schools, Louis (1991) reports that school experiences such as opportunities to engage in collaborative work are good predictors of a sense of effectiveness, while Louis and Smith (1993) use case study data to argue that improvements in teachers' work life, including working with other adults on professional activities and deprivatization of practice, are important in increasing teachers' sense of success when working with low achieving students.

Earlier studies that have examined efficacy in conjunction with measures similar to our concept of professional community also suggest a strong positive relationship. Hackman and Oldham (1980) assert that an increased sense of efficacy is an outcome of more effectively designed work environments, and is a predictor of high work effectiveness irrespective of the type of organization. Extending this argument into research on teachers' work, Rosenholz and Simpson (1990) note that any model that examines teachers' work cannot ignore sense of efficacy as a critical variable.

Ashton and Webb (1986) examined a number of characteristics of schools that related to

teachers' sense of efficacy, including school climate, professional role responsibilities, positive collegial relationships, and student conflict. Their qualitative "microethnography" based on teacher interviews indicate that there are strong relationships between work place characteristics, such as teacher influence in decision-making, and positive collegial relationships, that have a marked impact on teachers' sense of efficacy. From the evidence these studies provide, we suggest that improving the social-psychological condition of teaching is an important intervening variable in improving schools and the school experience of students. Teacher professional community, we hypothesize, will perform such a function in relation to teachers' taking responsibility for student learning.

School Level and Gender Composition: Intervening Cultural Effects

The differences between elementary and secondary schools are not just a consequence of size, but also of culture and function. According to a "classic" theorist, Willard Waller (1932), the secondary school teacher encounters a climate in which there is a clear sense of opposition between the interests and concerns of students and those of adults. In elementary schools, on the other hand, teachers have a more parent-like relationship with students. This point is also emphasized by Parsons (1959), who argues that the main function of elementary schools is socialization. Socialization is accomplished in part because students identify with their teacher. The main function of secondary schools, however, is selection and allocation of individuals to their future social status, a process that undermines the close relationship between teacher and pupil, and reinforces youth culture.

There is considerable reason to believe that school level (secondary school versus elementary school) may affect the development of professional community. Herriott and Firestone (1984) for example, found significant differences in the way in which elementary and secondary schools are structured. In particular, they found that power was more centralized in elementary schools, but that goal consensus was also greater. Hoy, Tarter, and Kottkamp (1991) argue, based on Mintzberg

(1979), that relations among elementary school staff tend to be less formal, and that the absence of subject matter specialization means that teacher's share more tasks and experiences. Also, teachers in elementary schools are bound together by a sense of a student's progress through a school, as compared to the segmentation of departments, which have a "non-articulated" view of students.

Elementary and secondary schools also differ in their gender composition. Given the salience of gender as a mediating characteristic in schools (Hansot & Tyack, 1988; Robertson, 1992), greater proportions of women teachers may account, at least partially, for documented differences in elementary and secondary school organization, as well as the development of professional community. Elementary school faculties are predominantly female -- 88 percent, compared to 53 percent in secondary schools (National Center for Educational Statistics, 1993). When women largely constitute a social group, its culture differs from that of a mixed group (Hofstede, 1991; Lenz & Myerhoff, 1985). Paying more attention to the work environment and to interpersonal relations than men typically do, women in groups are more likely to cooperate and help (Bartol & Martin, 1986). Through their effective use of verbal and non-verbal communication to express respect and other inter-personal considerations, women encourage community in social and work settings -- especially among other women (Shakeshaft, 1987; Tannen, 1991, 1994).

METHODS

Sample and Data

Data for this study were collected between 1991-1994 as part of the School Restructuring Study of the Center on Organization and Restructuring of Schools. Participating public schools (8 elementary, 8 middle, and 8 high schools) were selected through a national search for schools that had made substantial progress in organizational restructuring, including student experiences; the

professional life of teachers; school governance, management, and leadership; and the coordination of community resources (Berends & King, 1994; Newmann, 1991).

As part of a comprehensive data gathering process that included visits to the participating schools by a team of three researchers in the fall and spring of the year, all teachers were asked to complete a questionnaire on their instructional practices, school culture, professional activities, effects of restructuring, and personal and professional background.[1] The subject response rate, with 910 teachers completing surveys, ranged from 69 percent to 100 percent across schools. The item response rate for completed teacher surveys averaged 95 percent.

Measures

Teacher professional community and teacher responsibility for student learning represent dual outcomes in this two-stage investigation. In the first stage of the analysis, we examine the structural conditions and human and social resources of schools that, according to our theory, we expect to influence the development of professional community among teachers. In the second stage, we investigate the influence of professional community on responsibility for student learning, which we hypothesize to be positive and potentially affected by the teacher's personal background and general satisfaction with teaching at his or her school. We discuss here several of the more important constructs employed in our analyses: teacher responsibility for student learning, the professional community index, and the indices of structural conditions and human and social resources. (See Appendix A for a complete description of the measures employed in this investigation.)

Teacher responsibility for student learning. Constructed as a factor through a principal components analysis, responsibility for student learning combines several measures tapping teacher beliefs, including the extent to which teachers consider their students to be capable learners from whom they expect success and, as well, consider themselves to be responsible and effective agents in

instructing these students. Six survey items tapped teacher responsibility for student learning: (1) My success or failure in teaching students is due primarily to factors beyond my control rather than to my own efforts and ability (rev.); (2) I sometimes feel it is a waste of time to attempt to do my best as a teacher (rev.); (3) I am certain I am making a difference in the lives of my students; (4) Many of the students I teach are not capable of learning the material I am supposed to teach them (rev.); (5) The attitudes and habits my students bring to my class greatly reduce their chances for academic success (rev.); (6) To what extent do you feel that you have been successful in providing the kind of education you would like to provide for the students in your target class?[2] The internal consistency of this construct as measured by Cronbach's alpha is .66.

Teachers' professional community. Professional community is school-based, according to our model, rather than a representation of teachers' experience in other collegial groups, such as professional networks or organizations beyond the school.[3] We operationalize professional community as a characteristic of schools through an index that represents the mean of six components. The index is standardized (M=0, SD=1). Constituting the professional community index are the following measures: shared sense of purpose, collaborative activity, collective responsibility, collective focus on student learning, deprivatized practice, and reflective dialogue. Each of these measures is a single factor (except for collaborative activity, the sum of two factors; and collective focus on student learning, the average school emphasis on academic excellence) formed through principal components analysis. Each measure was aggregated to the school level and standardized (M=0, SD=1).

Shared sense of purpose conveys the notion that a consensus exists among the school staff regarding the school mission and the principles underlying the day-to-day operation. Collaborative activity combines a general assessment of the extent of teachers' cooperative practices and their perceived usefulness with a more specific temporal measure of collaboration. Collective responsi-

bility taps the extent to which the commitment to shared values is normative and translated into practice. Collective focus on student learning suggests the emphasis teachers place on academics. Deprivatized practice measures the frequency with which teachers observe each other's classes to critique their colleagues' teaching and to provide meaningful feedback, and, as well, the frequency of constructive review from supervisors. Reflective Dialogue gauges the amount of professional conversation directed at specific issues surrounding instructional practice.

Structural conditions for professional community. Although our model investigates the unique relationship to professional community for each of five structural characteristics of schools hypothesized to be influential (i.e., size; staffing complexity; time for planning; time spent on governance; and teacher empowerment), we have also constructed an index to measure the overall impact of the school structure. The index includes school size (i.e., smaller schools considered more favorable to the development of community); the proportion of academic faculty (as a proxy for staffing complexity); time available for teachers to meet and talk; time spent on school governance; and an index of teacher empowerment. The structural conditions index, standardized (M=0, SD=1), is the mean of its five components, each component also standardized (M=0, SD=1).

Except for the empowerment component, the meaning of each structural condition is straightforward. The more complex empowerment index comprises three domains of teacher influence -- over school policy (e.g., the content of in-service programs, school budgets, teaching assignments), student policy (e.g., behavior codes, discipline, and ability grouping), and decision making (staff involvement generally and personal involvement). The empowerment index (standardized, M=0, SD=1) is the mean of the component measures, all factors constructed from teacher reports, aggregated to the school level, and standardized (M=0, SD=1).

Human and social resources. The model examines the relationship to professional community of the following human and social resources of schools: the extent to which teachers feel

supported by the school administration; the respect accorded teachers by their colleagues, the administration, and others in the broader school community (i.e., district, parents, civic community); the attitudes of teachers and administration toward educational innovation and school restructuring; school rewards or sanctions pertaining to students' academic success or failure; and opportunities for professional development. The human and social resources index, standardized (M=0, SD=1), is the mean of its components, i.e., each human and social resources factor, aggregated to the school level and standardized (M=0, SD=1).

Analytic Approach

The analysis is set in a two-stage path analytic framework, with professional community as the outcome of interest in the first stage and teacher responsibility for student learning the focus in the second. Because the data are nested, i.e., teachers in schools, our primary analytic technique is multilevel -- hierarchical linear modeling (HLM) (Bryk & Raudenbusch, 1992). HLM partitions the variance in the dependent variable into its within- and between-school components. An HLM analysis, accordingly, employs two equations: (a) a within-school model that explains variation in the outcome for each school as a function of individual characteristics, and (b) a between-school model that explains the variation in the outcome as a function of the characteristics of schools. In our investigation we employ HLM in three modalities, described briefly here and explained more fully in Appendix B.

To estimate how much of the variability in responsibility for student learning and professional community exists within and among schools, we employ an unconditional HLM model (i.e., a model with no predictors at either level). The estimates of variability among schools indicate the extent to which teacher responsibility for student learning and professional community are explainable by organizational and contextual characteristics of schools.

We then investigate the relationship between professional community and the school features hypothesized to facilitate its formation and maintenance -- namely, the structural conditions and human and social resources discussed above. Recognizing also that school cultures, reflecting differences in school organization, school level, and faculty gender composition, may also influence professional community, we examine these relationships. Our initial analysis is descriptive, a comparison by grade level of the structural conditions and the human and social resources of schools potentially supportive of professional community. Employing HLM in a means-as-outcome regression model, we estimate the influence of school characteristics, namely, their structural conditions and human and social resources, on teacher professional community.

In the second stage of the analysis, teacher responsibility for student learning is our focus. We examine the variation in the responsibility teachers assume for student learning both as a function of background and attitudinal characteristics and as a function of school contextual characteristics. Hypothesizing that professional community in schools will positively affect teacher responsibility for student learning, we examine these relationships in a multivariate analysis using a full HLM model (i.e., with predictors both within- and between-schools).

RESULTS

While most of the variation in professional community is explainable by within-school factors -- e.g., differences in teachers' background, perceptions, and experiences, a substantial amount of variance (33 percent) exists between schools.[4] Our theoretical model attempts to explain this variation in professional community as a function of the structural conditions of schools, their human and social resources, and salient contextual features, namely, level and gender composition. Although teachers' responsibility for student learning varies most within schools, i.e., among teachers, a moderate proportion of the variance in responsibility for student learning (28 percent) is a function of school

features. While the cultural context arising from school demographics is likely to prove important, professional community, according to our hypothesis, is the primary influence on teacher responsibility for student learning.

The HLM reliabilities, .90 and .88, respectively, differ very slightly for professional community and teacher responsibility for student learning. Unlike reliability as measured by Cronbach's alpha, i.e., the internal consistency of a construct, these HLM reliabilities measure the ratio of the true score (parameter variance) to the observed score (total variance of the sample mean) (Bryk & Raudenbusch, 1992).[5]

The Relationship Between Structural and Human Resources and Professional Community

Descriptive analyses. Overall, the high schools in our sample are the largest schools, averaging close to 1100 students, followed by Middle schools, averaging 825 students. Elementary schools are smallest with, on average, about 640 students. Two of the elementary schools are very large, however, each enrolling over 1,000 students. Two of the high schools, on the other hand, are quite small, with one enrolling about 525 students and the other just 450. One middle school is unusually large with 1,970 students. Another middle school, enrolling 280 students, is the smallest school in the sample. Staffing complexity, not surprisingly, increases at the middle and high school levels, where 35 percent of the faculty are non-academic, compared with 22 percent at the elementary level. The amount of planning time available to teachers and the amount of time teachers spend on school governance does not vary significantly according to level. Empowerment does differentiate the groups, however, with elementary school teachers the most empowered and high school teachers the least, $P \leq .01$.

Insert table 1 about here

The distribution of human and social resources among the schools in our sample is largely independent of grade level. Regarding the principal as supportive, receiving feedback from parents and colleagues, and participating in staff development do not vary significantly among elementary, middle, and high schools. Greater openness to innovation and feeling respected, however, are more characteristic of elementary school teachers than of their middle and high school counterparts, $P \leq .05$ and $P \leq .01$, respectively.

HLM analyses. In a series of bivariate HLM analyses, we investigated the unique contribution of each structural and human and social resource feature of schools to professional community. Except for amount of planning time and empowerment, most of the structural features -- school size, staffing complexity, and the amount of time teachers spend on governance -- exert little or no influence on professional community (Table 2). As the amount of time for teachers to meet, talk, and plan increases, however, professional community is more likely to exist among teachers, $ES = .44$, $P \leq .05$.[6] Planning time accounts for 13.5% of the variance among schools in teacher professional community. In schools where teachers are empowered -- with influence over school and student policy, and involvement in decision-making -- the level of professional community is considerably higher, $ES = .62$, $P \leq .01$. Empowerment accounts for 35 percent of the between-school variance in professional community.

Insert table 2 about here

Human and social resources also enhance professional community in schools (Table 3).

Where teachers experience the support of their principals, the level of professional community tends to be higher, ES=.69, P $\leq$.001. The respect teachers receive -- whether from other students, other professionals, or the community more generally -- contributes substantially to professional community, ES=.78, P <.001. When openness to innovation characterizes faculties, the level of professional community is substantially higher than at schools where the status quo prevails, ES=.75, P. <.001. Feedback from parents and colleagues and staff development also contribute significantly to professional community, ES=.40 and ES=.46 respectively, P $\leq$ .05. Much of the between-school variance in professional community is explainable by the human and social resources of schools -- especially by respect (54 percent) and openness to innovation (59 percent).

Insert table 3 about here

We constructed indices of the structural conditions and the human and social conditions in order to examine their composite relationship with professional community among the 24 schools in our sample. The indices are not interrelated, r=-.099. The structural conditions index has a modest correlation with professional community, r=.225, while the relationship of human and social resources to professional community is very strong, r=.795. Figure 2 illustrates the somewhat amorphous relationship of structural conditions to professional community. For the elementary schools ranking highest on professional community, E1 and E3, structural conditions have little bearing on community. Structural conditions at the middle schools vary widely with little apparent relationship to professional community. Middle schools M2 and M4, for example, are rather close structurally, but the two schools have very different levels of professional community. Similarly, middle schools M1 and M6 represent a contrast in schools with M1 possessing highly favorable structural conditions and M6 rather unfavorable conditions -- yet M6 ranks somewhat higher than M1

on professional community. With a single exception, H6, the high schools all cluster in or very close to the lower left quadrant of the plot -- low on professional community and also low on facilitating structural conditions. Among all the schools, H6 -- possessing favorable structural conditions -- ranks third in professional community. Within the high school level, however, schools with similar structural condiditions vary widely on professional community -- for example, schools H7 and H2 or H3.

The scatterplot depicting the relationship between human and social resources and professional community tells a different story, strongly influenced by the schools at either end (Figure 3). Schools E1 and E3, evidencing the most professional community, outrank the other schools in human and social resources. A reversed situation exists for schools M2 and H7. For the schools clustering in the center of the plot, the relationship is less powerful. Interestingly, schools E1 and E3 each have over 95 percent female faculty, while school M2 has a predominantly male faculty. School E1 is quite large, with just over 1000 students (E3 has over 750), but school M2 is very small with just 250 students. Among the high schools, although H3 and H5 parallel each other in human and social resources, they differ considerably on professional community and size. H3, a very large high school with 2400 students ranks considerably higher in professional community than H7, a comparatively small high school with under 500 students.

Insert figure 3 about here

The Impact of School Level and Gender Composition on Professional Community

Our examination of the structural conditions and human and social resources indices in relation to professional community indicated that school contextual features, as we suggested earlier,

may indeed contribute to the presence of professional community in schools. Salient contextual features, in our view, are the relative lack of organizational complexity typical of most elementary schools and the variation in school culture likely to result from the gender composition of schools. To investigate the influence of school level and gender composition (i.e, the proportion of female faculty) on professional community, we employed a further scatterplot analysis.

Except in schools H6, H8, and M2, women constitute the majority of the teaching staff in the schools -- from about 50 percent (school M8) to almost 100 percent (schools E1, E3, and E8) (Figure 4). The highest proportions of female faculty are in the elementary schools, the lowest proportions are in the high schools.[7] Middle schools have the greatest range in their gender composition, high schools the least. Thus, while the scatterplot demonstrates a strong relationship between gender composition and professional community, it also indicates a solid relationship between level and professional community. Clearly, gender composition and level are confounded.

Insert figure 4 about here

Teacher Professional Community and Teachers' Responsibility for Student Learning

The within-school HLM model initially evaluated included attributes of teachers with the potential to affect the responsibility they take for student learning, i.e, personal demographic characteristics, such as gender, years of teaching experience, and academic faculty status; and an attitudinal characteristic -- the satisfaction teachers experience with their present school. Satisfaction serves as a control for positive attitudes toward teaching that could be confounded with responsibility for student learning. Ultimately, however, teachers' gender and their faculty status (academic vs non-academic) proved non-influential as indicators of teachers' professing their responsibility for student learning. Although teachers' years of experience is generally not significant in predicting

responsibility, a relatively small but negative relationship does occur with increased experience. Teaching satisfaction differentiates teachers within the schools on their sense of responsibility for student learning, ES=.58, P $\leq$.001. (Table 4). On average, across all schools, more satisfied teachers take greater responsibility for student learning.

Insert table 4 about here

Because of the confounding between gender composition and level, we estimated their influences on teacher responsibility for student learning in separate between-school models, each also incorporating the professional community index. Each model is adjusted for the within-school differences just described. We executed the between-school investigation in two steps. In the first step we modeled either level or the proportion of female faculty; in the second step, we introduced the index of professional community.

The proportion of female faculty contributed positively to average responsibility for student learning, ES=.58, P $<$.05, and the model itself explained 40 percent of the between-school variance (Table 5A). With the introduction of professional community, however, the proportion of female faculty no longer proved significant. Professional community clearly enhances teachers' sense of responsibility for student learning, ES=.55, P $\leq$.05, explaining an additional 13 percent of the variance.

Insert table 5A about here

In the second model, high school level evidenced an extremely large negative relationship with teachers' responsibility for student learning, ES=-.88, P $\leq$ .05, and accounted for 11 percent

more of the variance than did gender composition in the previous model (Table 5B). Similar to the previous model, the demographic contextual feature -- in this instance, level -- became insignificant in the presence of teachers' professional community. Adjusting for level, the effect of professional community is substantial, ES = .41, $P \leq .05$, accounting for 60 percent of the variance in professional community among schools. Professional community thus explained an additional 9 percent of the variance in responsibility for student learning.

Insert table 5B about here

In a comparison of the relative explanatory power of the two demographic contextual features -- level and gender composition -- in accounting for the variance in responsibility for student learning that occurs between schools, level (explaining 51 percent of the variance, 11 percent more than gender composition) is a more powerful predictor. But when schools have professional community, both gender composition and level become less salient. Important to the formation of community in schools were their human and social resources. Strongly influencing professional community are administrative support, respect from colleagues and community, and openness to innovation among the staff. While they are somewhat less powerful sources of professional community, feedback from parents and colleagues, and staff development also contribute to community.

DISCUSSION

Because of the relatively small sample of schools, our study must be viewed as suggestive rather than definitive. Nevertheless, the analysis presented above has a number of important implications.

School-wide Professional Community

First, our descriptive findings are of some significance. The data imply that there is a phenomenon that can be labeled "school wide professional community" that varies between schools. This is significant in the sense that many experiences that social scientists believe ought to be characteristics of a school's culture turn out, on further examination, to vary widely within schools. In the case of professional community, the work of Talbert (1993) and Rowan (1991) suggests that in traditional high schools there are multiple loci in which community can be found. Teachers may seek satisfying professional relationships within a department, among smaller groups of colleagues, or in networks of teachers from several schools. Our data do not, of course, disprove this contention, but indicate that school wide community is also an observable phenomenon, at least in restructured schools.

Facilitators of Professional Community

More importantly, the data imply rather strongly that professional community emerges more clearly in some contexts than in others, and that the factors that support the development of professional community are "manipulable" in the sense that policy and administrative practice can engender them. Although both structure and human resources are important, the findings suggest that human and social resources are more critical to professional community, which is consistent with recently completed longitudinal case studies of five urban schools (Louis and Kruse, in press). This finding adds weight to the argument that the structural elements of "restructuring" have received excessive emphasis in many reform proposals, while the need to improve the culture, climate and interpersonal relationships in schools have received too little attention. While it may be easier to imagine how to restructure schools rather than to change their culture, the latter is the key to successful reform.

Our data do provide some support, however, for the assumption that changing school structure can enhance professional community. Both providing more time for collaborative work and empowering teachers to make key decisions about school policy contribute to professional community. These results are consistent with a previous survey of teachers in restructuring schools, which identified collaboration and empowerment as significant factors associated with teachers' quality of work life (Louis, 1991).

The finding that school size is not associated with teachers' professional community is both counter-intuitive and intriguing. There have been, as we noted above, strong arguments in favor of smaller schools, including schools-within-schools. The argument that larger schools inevitably result in divisive sub-cultures for teachers, whether these be departments, teams, or vocational-academic divisions, is simply not borne out in these 24 restructuring schools, where some of the larger schools rank above average on proessional community, while some of the smallest are below average. As the scattergram suggests, this finding is not a consequence of one or two outliers, but reflects a "true non-relationship." This does not mean, of course, that findings from samples of non-restructuring schools suggesting that size affects most teachers' lives are erroneous. Rather, we interpret our finding as support for the argument that the "problem" of size and community can be overcome with specific targeted efforts and supportive leadership that create denser patterns of interaction within the school.

For example, Devil's Creek (E1) is a large elementary school (just over 1000 students, with 65 teachers) that is also characterized by high professional community schools.[8] A visitor can easily observe sustained conversations among faculty that are based on their dedication to Henry Levin's "Accelerated Learning" program. Because this commitment is school-wide, it has woven bonds of commonality across grade levels and specialties. The frequency of conversation about school goals and strategies were deliberately fostered by the principal through efforts as varied as a peer mentoring

program for teachers, and the many meetings (most of which occur on "non-school time") that are devoted to school improvement. The sense of community and mutual accountability at Devil's Creek was articulated by the previous principal, who said, "We have redefined ourselves as a family with a common goal...We are, first and foremost, accountable to our students, our colleagues, and ourselves."

In contrast, Whitehead (M2) is one of the smallest schools in the study, a magnet 5-8 middle school, with under 300 students, nine teachers and four "interns." Despite its small size it had the lowest scores on professional community. Whitehead's differentiated staffing structure degenerated into a "three tier system" within a tiny faculty, in which four teachers had enormous power and influence, the remaining five had little, and the student interns (who were there for a whole year and had nearly a full teaching load) were viewed as temporary help and a source of cheap labor. Not surprisingly, the lack of opportunity to openly discuss fundamental and troublesome issues (such as whether the school's unusual curriculum and educational philosophy were suitable for all children) undermined people's willingness to work together on school matters.

School Level Effects

We expected and observed both a school level effect and a separate gender effect. Elementary schools have a stronger sense of professional community than do secondary schools, particularly high schools. However, it is important to point out that although this relationship is strong, it is not inevitable. Of the 24 schools in our sample, the two with the highest levels of professional community were elementary schools, and the three with the lowest were middle or high schools. However, one high school (H6) stands out on our scatterplots as distinctively above average, while several of the high schools were clustered in the middle of the pack. If we look at case

material from these schools, several interpretations of this finding emerge.

First, the highest scoring high school is the most radically restructured of all of the schools in our sample. It is a new school-of-choice with 450 students who are largely poor, and from the inner city in of one of the county's largest metropolitan areas. City Park espouses the principles of the Coalition of Essential Schools, placing the greatest emphasis on reinforcing "habits of the mind" and preparing all students for post-secondary work. It is also organized into interdisciplinary teams that take full responsibility for curriculum design for their grade levels. Although the school is small, the team is the basic unit of faculty interaction and empowerment. However, there are also frequent meetings across grade levels that focus on curriculum articulation. Teachers are constantly in-and-out of each other's classrooms, and indicate that they feel a strong sense of accountabiliity to each other for the quality of their performance.

Not only is City Park a school-of-choice for students, but also for teachers: Most teachers agree that they were drawn to the school because of its unique character, and that it would not be possible to remain there if one did not fully subscribe to the collaborative, interdisciplinary process that is the focus for teachers' work. Teachers in City Park have also decided to keep class sizes small by minimizing the use of specialists such as guidance counselors, librarians, etc., and using their personnel resources for more classroom teachers. In fact, the only specialists regularly working in the school are a few that deal with special education students. Clearly this organizational structure and its associated human resources would be difficult to replicate in a typical comprehensive high school.

The high schools that scored less highly on professional community appeared to be less far along in creating a consensus about goals and a language of reform: Faculty meetings and other interactions frequently revealed pockets of resistance. Reform proposals that were brought up for faculty action sometimes created opposition or even hostility. Given what we know about the

differences in climate between "regular" elementary and secondary schools discussed earlier in this paper, one of the issues that we are observing is that reform and restructuring move more slowly in secondary schools in part because of the need to make more dramatic readjustments in the nature of professional community -- away from departments and specializations, and toward broader school wide goals -- whereas goal consensus already characterizes many reasonably healthy but traditional elementary schools.

For example, the lowest scoring comprehensive high school, Indian Lakes (H7), made efforts to group teachers across departments, organizing all teachers assigned to the "preparatory division" (grades 9-10) in interdisciplinary teams. In these teams, interacting with a smaller number of colleagues and having fewer students per day are viewed as a source of excitement and development for some faculty. But because time is limited and not all teams could be scheduled with common planning periods, the effort put into curriculum and instructional issues is limited -- a common problem for several of the high schools in our sample. A second problem at Indian Lakes was that a substantial miniority of teachers (25-30%) did not "buy in" to the reform activities. All of them were deliberately assigned to the 11th and 12th grades, which were more traditional in structure. This strategy preserves surface harmony but undermines school-wide community. Dissident minorities also existed in several of the schools with higher community, but in these cases teachers who did not agree with the reform effort were more likely to leave or be absorbed into the reformist group than to be accomodated. It is also important to note that it was not the absence of structures that prevented Indian Lakes from becoming a professional community: The school is associated with a significant teacher center that provided a wide variety of professional development, and has developed a wide variety of committees that could have become venues for conversation. But neither teams, governance committees, nor a planning committee that was charged with producing a "tranformation plan" exhibit reflective dialogue among teachers. The site observers note that the

absence of a school-wide vision about how to restructure and the large number of unrelated innovations that have emerged have distracted teachers from sustained discussions about the purpose of change.

But some comprehensive high schools scored in middle of the pack in terms of professional community in spite of initial barriers similar to those faced by Indian Lakes. Comprehensive high schools that scored higher on professional community exhibited a "common language" of reform, and consensus around a set of goals for themselves and students. Landfall High School (H4), for example, developed a "Belief Statements" document which set out values and principles for the reform effort. Aspects of the statements are discussed regularly at faculty meetings, which reinforces a "we-ness" across grade levels. Although there are conflicting opinions, as at Indian Lakes, these are openly discussed and reasonably well distributed among grade levels and other groupings in the school. Differences of opinion (of which there were many) did not develop into obstacles for change, but became issues for discussion. Teaming involves teachers in multiple groups rather than a single team. The various teams, committees and governance structures, although time consuming, mean that many teachers regularly interact on a fairly intensive level with others in the school, which supports a great deal of informal conversation about teaching and learning.

We also hypothesize that an active involvement in govenance may be more important in the traditional high schools. Although there are fewer opportunities than in elementary schools for the whole staff to come together, governance meetings in Landfall, as in several other of the higher scoring comprehensive high schools, provided the primary vehicle for raising key issues that all of the staff should think about. What they did not provide, however, was a real opportunity for reflective dialogue, which tends to occur in the smaller groups. A final observation is that high schools were less likely than elementary or middle-grade schools to have meaningful school-wide professional development activities that focused on curriculum and instruction. Where more intensive

inservice activities were available, however, they tended to provide opinion leaders in the school with skills and self-confidence, which aided them in influencing their colleagues. However, the absence of *common* intellectual experiences may help to explain why they are more likely to appear among the lower scoring schools on the dimension of professional community.

Gender Composition

The gender composition relationships observed in our analyses at the school level are overwhelmed at the individual level by the strong association between gender and job satisfaction, which is, in turn associated with responsibility for student learning. This result does not, however, obviate the important observation that gender composition is very strongly associated with the degree of professional community in both elementary and secondary schools. To interpret this result, we believe that it is important to look not only at data collected from surveys of schools, but at broader scholarly studies of differences between men and women in their orientation toward work and colleagueship. Probably the most insightful, as well as the best documented of these, is the life-time work of Hofstede (1991) on cultural differences in work-related values. Hofstede's data suggest that:

> on average, men have been programmed with tougher values and women with more tender values, but that the gap between the sexes varies by country...individual women can learn to function in a masculine way and individual men in a feminine way. *Where men are together a masculine culture is likely to dominate; where women are together a feminine culture. Calling these differences 'cultures' stresses their profound and emotional nature.* (p 85).[9]

Based on his review of the literature and his own and colleagues' studies of gendered cultures in different countries, Hofstede summarizes the differences in social values as shown in Figure 5. These differences suggest that in organizational settings -- perhaps particularly schools, which

Hofstede identifies as very deeply affected by the value assumptions of both the country and employees -- the dominance of women may create very different cultures. These cultures will emphasize some of the features that we have identified with professional community: cooperation/collegiality; deprivatization of practice (which is premised on the notion of "modesty" or that everyone can learn from their weaknesses); and respect, which, as we have defined and measured it, is based on acceptance as well as recognition of competence.

Our case study data are difficult to interpret in this regard, as we did not observe or conduct interviews that focused on gender composition. However, we may contrast two middle schools, one of which was high on both professional community and percentage of women, and the other of which was low on both of these (relative to our sample of 24 schools). Bay Side Middle (M5) had only two male faculty members among the "regular academic" staff -- and a total of 80 percent of the professional staff were women. In comparison, Whitehead Middle (M2) had three male "lead teachers" out of four, and two male teachers among the remaining five; approximately 45 percent of the staff were women. The contrast between the professional climate in the two schools feels almost like a parody of Hofstede's accounts of differences between male and female approaches to organizations: In Whitehead Middle, attention to issues of power and control were present in virtually every interaction in the school, even though the initial administrators were low-key and non-intrusive (the school was intended to be "teacher run"). The lead teachers adamantly refused to socialize with the other teachers ("I don't do that -- my time off is for me.") and dismissed the importance of adult-to-adult support, although the school was designed to (and did) provide extensive adult-child support. Although it was a middle school, students had a great deal of freedom to choose courses. We observed considerable gender segregation in classes, however, a situation which was not viewed as a problem by the "lead teachers."

In Bay Side Middle School, the teachers were organized into teams, two of which had only

women on them. These teams were viewed by all but a few of the women (not the two male teachers) as a major source of support and professional development. The two teams composed only of women operated very differently, but functioned according to the same rules: all members were viewed as equal; all members were expected to exhibit caring, especially for students but also for others; students were to be supported and helped, but not criticized; emphasis was placed on the importance of creating a quality learning environment for students and for each other. The third team, which had two men and a new teacher, was viewed as dysfunctional by both the administration and by us. Much of their team time was used in "busy work" and there were frequent episodes of complaining about students, working conditions, etc. Both the men and the women on the team were less satisfied with their working conditions than teachers on the other two teams. Despite the fact that there were known "differences of opinion" between members in both of the two female-only teams, the emphasis on cooperation and setting mutual goals appeared to prevail in observed sessions.

Professional Community, Responsibility for Student Learning, and School Restructuring

Studies connecting responsibility for student learning to improved student achievement are rare in education, but overall the evidence points to a reasonable assumption that teachers' increased sense of mastery and control over student learning is likely to be either a cause or a consequence of improvements in student performance. Our data suggest that teachers' working conditions -- the individual's job satisfaction and the school's level of professional community -- are a primary factor associated with responsibility for student learning. The relative power of the HLM model presented above suggests that most national, state and local policies designed to increase teacher's job performance are ill-placed. The current movements of "systemic reform" and "teacher professionalism" both emphasize the upgrading of teacher skills and knowledge through professional development. This is not necessarily bad, but our data suggest that professional development is less

important in producing professional community -- and, therefore, responsibility for student learning -- than changing the climate and culture of the school.

Is the current restructuring movement off-base in its emphasis on curriculum standards, and the alignment of testing, accountability and professional development to these? Our study cannot answer this question, but it does point to a missing element of the systemic reform/professionalization movement: Namely, the development of schools as healthy, professionally sustaining environments in which teachers are encouraged to do their best job. This has been a sub-theme of many of the educational reform efforts from the 1960s until the present. Perhaps it is time that it become a dominant component of the call for reform, rather than a secondary whisper.

Technical Notes

[1] Additional quantitative data include a school profile survey, student questionnaires from all students on a designated grade level, and, for six core classes (3 social studies, 3 mathematics), ratings of observed instruction, ratings of teacher assessment tasks and student performance, and student baseline achievement data for core classes. Core class teachers were interviewed during the fall and spring site visits. Other teachers, administrators, parents, community members, and students were interviewed also, some on both the spring and fall visits.

[2] For core teachers, the target class is their core class. All other teachers were instructed to consider as the target class the first class of the week that they meet to teach a specific subject on a regular basis.

[3] Little and McLaughlin (1993) note that teachers may encounter conflictual collegial demands if they experience membership in multiple collegial groups simultaneously. Involvement in a rewarding subject area network outside of school may limit teachers' engagement within school.

[4] The amount of between-school variation, the intraclass correlation in HLM terminology, is the ratio of the between-school variance (Tau) to the total variance, Tau plus sigma-squared (the within-school variance). For the calculation of the intra-class correlation, sigma-squared was adjusted for the reliability of the teacher professional community construct, $\alpha = .69$. Cf. Appendix B.

[5] The reliability is a function of the variability in means across schools and of sample size (Bryk & Raudenbusch, 1992).

[6] The effect size (ES) metric indicates the relative size (e.g., How big? How small?) of the estimated relationships. The effect size metric is in standard deviation units, computed by dividing the HLM gamma coefficient (standardized for continuous variables [M=0, SD=1], otherwise dummy-coded [0,1]) by the HLM-estimated standard deviation for the appropriate outcome variable. An effect size is small if it is less than .1; moderate, if between .2 and .5; large, if over .5 (Cohen, 1977; Rosenthal & Rosnow, 1984).

[7] In the elementary schools in our sample 87 percent of the faculty are female, just below the national average. While the secondary schools in our sample surpass the national average of 53 percent (66 percent of the middle school teachers are women, as are 57 percent of the high school teachers), the proportion of female faculty is considerably less than in the elementary schools.

[8] All school names are pseudonyms.

[9] Note that Hofstede's studies suggest that among the European and North American countries, the U.S. is highly "masculine" in its work related values, along with all of the other English-speaking countries. This contrasts with the Nordic countries and the Netherlands, which all espouse "feminine" work values systems. Among the 100 countries studied in Hofstede's research, the U.S. ranks 15th in terms of masculinity.

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Table 1
Structural Conditions and Human and Social Resources Affecting Professional Community in Elementary, Middle, and High Schools

Variables	Elementary (N=8)	Middle (N=8)	High (N=8)	Significance Level
Structural Conditions				
School Size	641	827	1085	ns
Staffing Complexity (% Non-Acad. Faculty)	21.9	35.3	34.5	*
Planning Time	.00	.35	-.15	ns
Governance Time	-.21	.21	-.01	ns
Empowerment Index	.24	.13	-.25	**
Human and Social Resources				
Supportive Principal	.11	-.28	-.03	ns
% High Innovation	75.1	53.6	45.0	**
Respect	.34	-.06	-.18	*
Feedback from Parents and Colleagues	.21	.14	-.35	ns
Staff Development	.05	-.08	-.07	ns

ns non-significant * $P \leq .05$; ** $P \leq .01$

Table 2
Structural Conditions of Schools and the Dimensions of Teacher Professional Community: Bivariate Between-School HLM Analyses

Independent Variables	Dependent Variable: Teachers' Professional Community	Proportion of Between-School Variance Explained
Intercept	.04[a]	
Size	.03	0.0%
Staffing Complexity	-.07	0.0%
Amount of Planning Time	.44 *	13.5%
Amount of Governance Time	-.30	3.1%
Empowerment Index	.62**	35.0%

[a] The effects displayed in this table are in a standardized metric, computed by dividing the HLM gamma coefficient for each outcome by the adjusted school-level standard deviation for that outcome computed by HLM.

** $P \leq .01$

Table 3
Human and Social Resources and the Dimensions of Teacher Professional Community: Bivariate Between-School HLM Analyses

Independent Variables	Dependent Variable: Teachers' Professional Community	Proportion of Between-School Variance Explained
Intercept	-.04[a]	
Supportive Principal	.69 ***	40.7%
Respect	.78 ***	53.7%
Openness to Innovation	.75 ***	59.4%
Feedback from Parents and Colleagues	.47 *	19.6%
Staff Development	.52 *	24.7%

[a] The effects displayed in this table are in a standardized metric, computed by dividing the HLM gamma coefficient for the outcome variable by the adjusted school-level standard deviation for that outcome computed by HLM.

* $P \leq .05$ *** $P \leq .001$

Table 4
Teacher Responsibility for Student Learning: A Within-School HLM Model

	Dependent Variable Responsibility for Student Learning
Independent Variables	
Intercept (School Average)	.12[a]
Years of Experience	.17
Years of Experience (Quadratic Term)	-.12 *
Teachers' Satisfaction with Present School	.58 ***
% Within-School Variance Explained	5.8

[a] The effects displayed in this table are in a standardized metric, computed by dividing the HLM gamma coefficient for the outcome variable by the adjusted school-level standard deviation for that outcome computed by HLM.

~ $P \leq .07$ * $P \leq .05$ *** $P \leq .001$

Table 5A
The Comparative Relationship of Gender Composition and Professional Community in Schools to Teacher Responsibility for Student Learning: An HLM Analysis

	Dependent Variable	
	Responsibility for Student Learning	
	I	II
School Mean		
Base	.01	.01
% Female Faculty	.58 *	.32
Community Index		.55 *
% Between-School Variance Explained	40.2%	53.1

[a] This model is also adjusted for within-school differences on gender, years teaching, a quadratic term for years teaching, academic faculty status, and teacher satisfaction with teaching at his/her present school.

[b] The effects displayed in this table are in a standardized metric, computed by dividing the HLM gamma coefficient for each outcome by the adjusted school-level standard deviation for that outcome computed by HLM.

** $P \leq .01$

Table 5B
The Relationship of Grade Level and Professional Community in Schools to Teacher Responsibility for Student Learning: An HLM Analysis

	Dependent Variable	
	Responsibility for Student Learning	
	I	II
School Mean		
Base	.19	.20
Elementary School	.70	.45
High School	-.88 *	-.77
Community Index		.41 *
Proportion of Variance Explained	51.1%	60.2%

[a] This model is also adjusted for within-school differences on years teaching, a quadratic term for years teaching, academic faculty status, and teacher satisfaction with teaching at his/her present school.

[b] The effects displayed in this table are in a standardized metric, computed by dividing the HLM gamma coefficient for each outcome by the adjusted school-level standard deviation for that outcome computed by HLM.

* $P \leq .05$

52

53

Figure 1
Professional Community and Teachers' Responsibility for Student learning

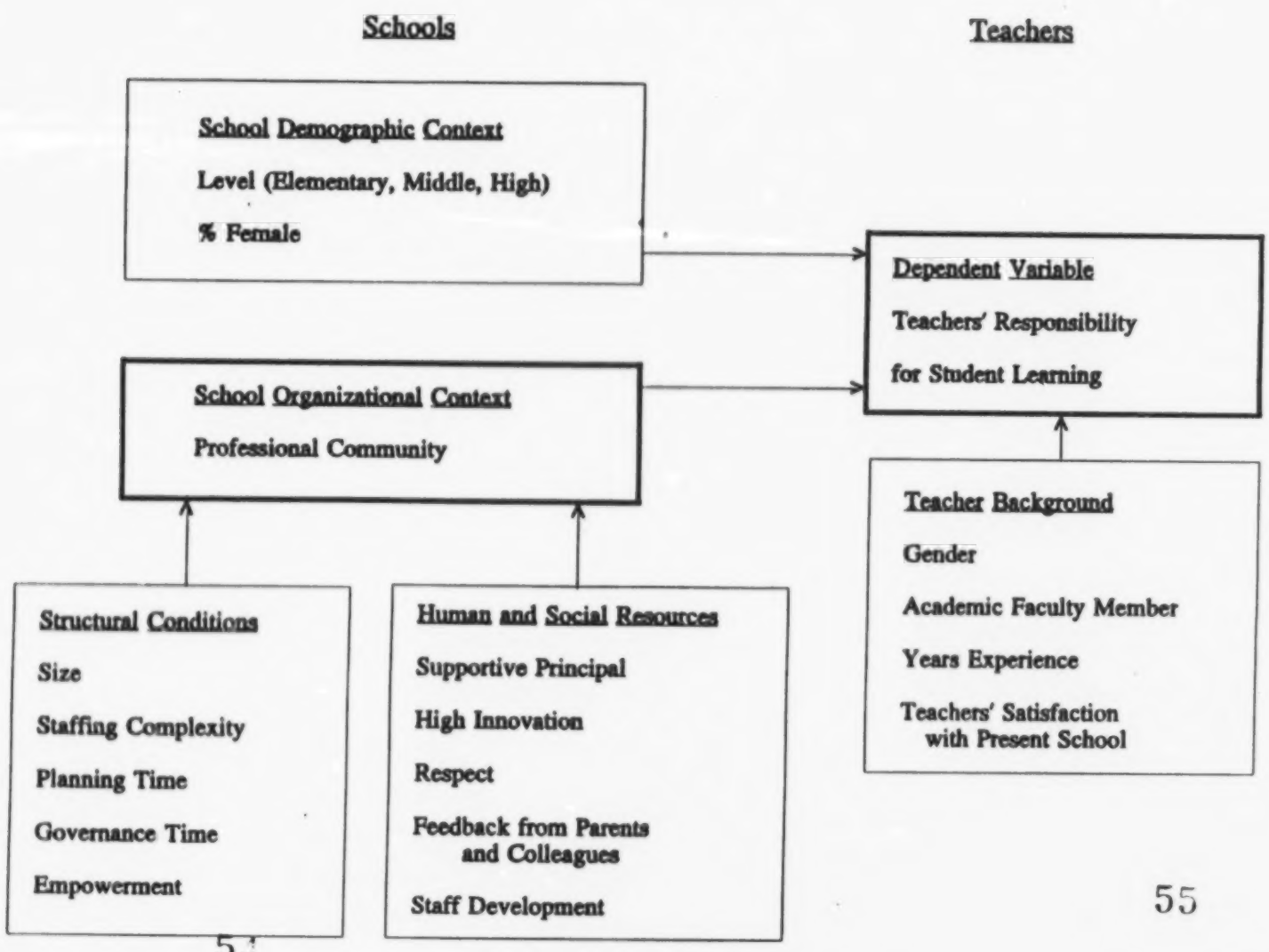

Figure 2
School Structural Conditions and Teacher Professional Community

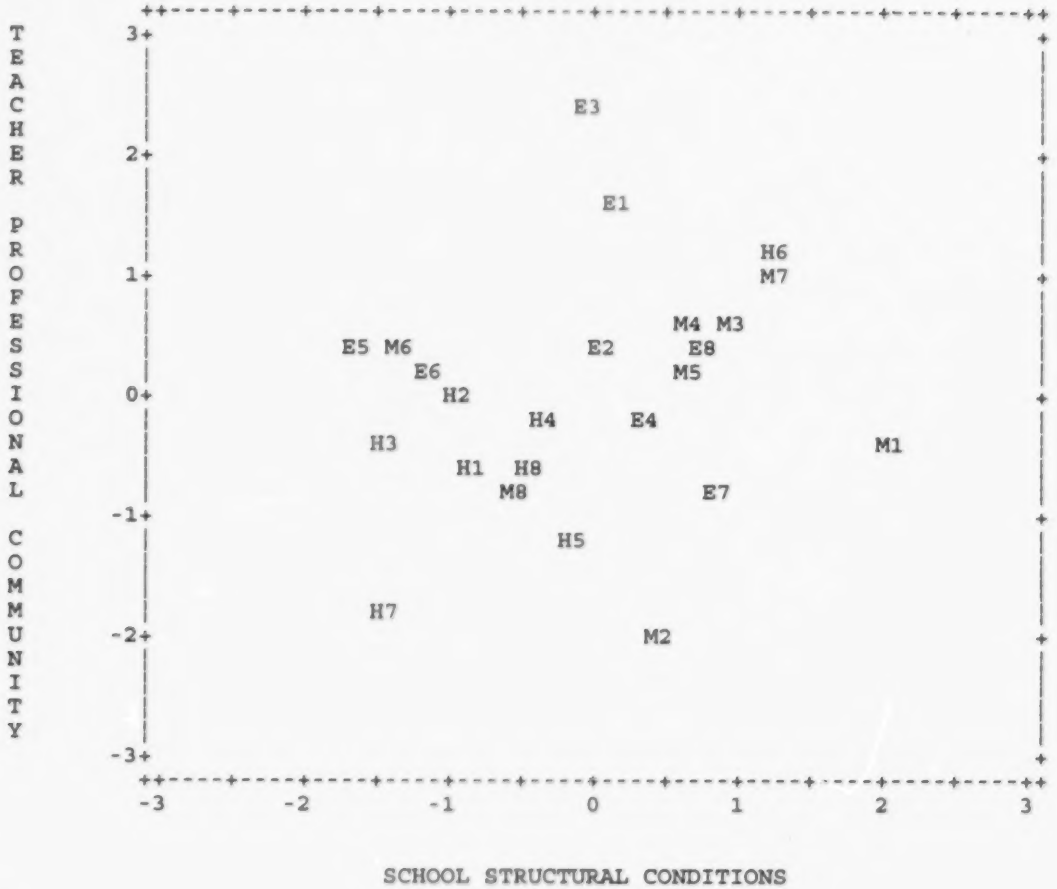

Figure 3
Human and Social Resources and Teacher Professional Community

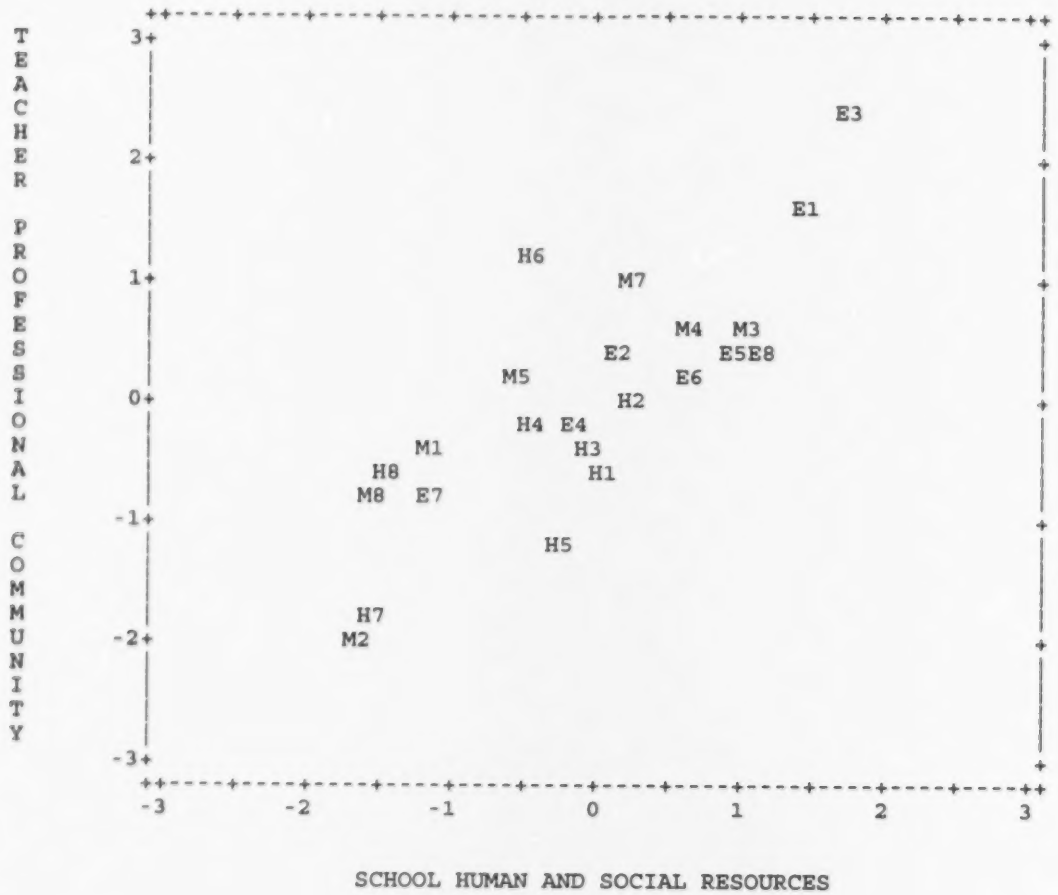

Figure 4
Gender Composition and Professional Community

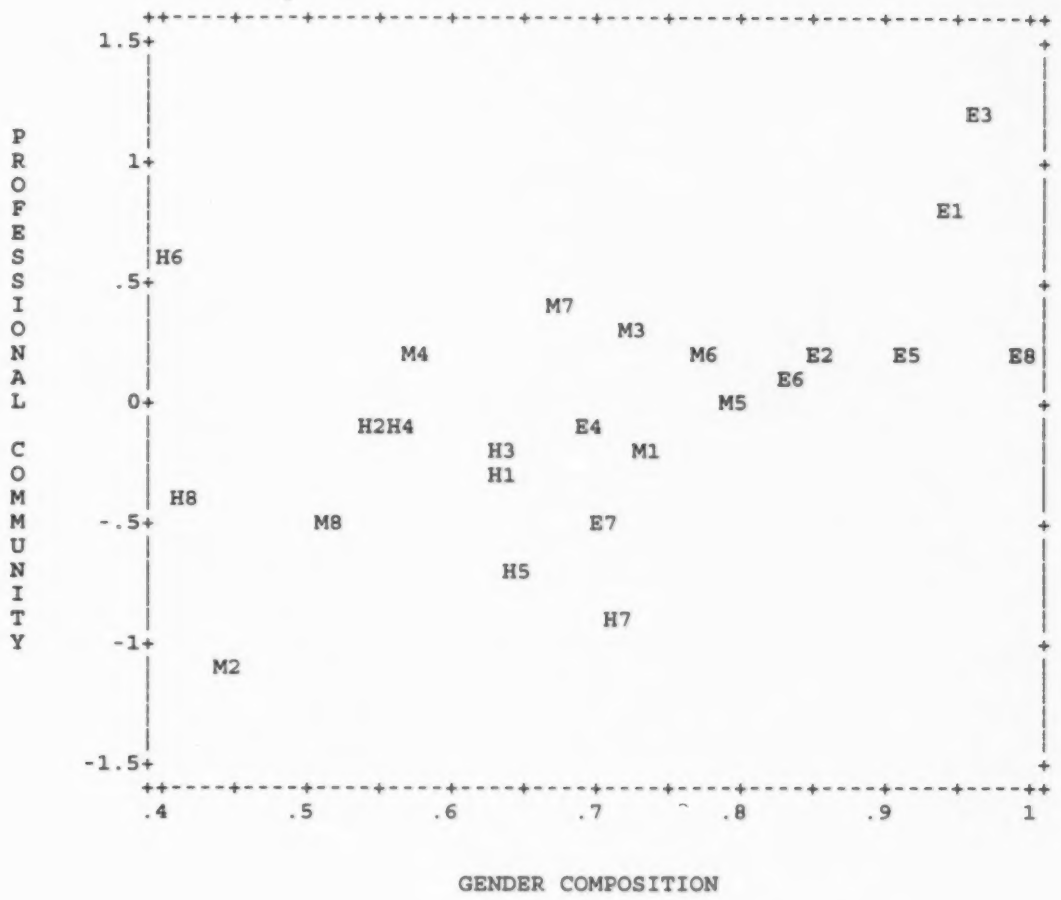

Figure 5

Key Differences Between Feminine and Masculine Societies:
General norm, Family, School and Workplace

Feminine	*Masculine*
Dominant values in society are caring for others and preservation	Dominant values in society are material success and profits
People and warm relationships are important	Money and things are important
Everybody is supposed to be modest	
Both men and women are allowed to be tender and to be concerned with relationship	Men are supposed to be assertive, ambitious and tough
	Women are supposed to be tender and to take care of relationships
In the family, both fathers and mothers deal with facts and feelings	In the family, fathers deal with facts and mothers with feelings
Both boys and girls are allowed to cry but neither should fight	Girls cry, boys don't; boys should fight back when attacked, girls shouldn't fight
Sympathy for the weak	Sympathy for the strong
Average student is the norm	Best student in the norm
Failing in school is a minor accident	Failing in school is a disaster
Friendliness in teachers appreciated	Brilliance in teachers appreciated
Boys and girls study same subjects	Boys and girls study different things
Work in order to live	Live in order to work
Managers use intuition and strive for consensus	Managers are expected to be decisive and assertive
Stress on equality, solidarity and quality of work life	Stress on equity, competition among colleagues and performance
Resolution of conflicts by compromise and negotiation	Resolution of conflicts by fighting them out

From: Geert Hofstede (1991) Cultures and Organizations: Software of the Mind. New York: McGraw Hill, p. 96.

APPENDIX A

CONSTRUCTION OF VARIABLES

Construct	Components	Cronbach's Alpha
Teacher Responsibility for Student Learning		.66
	• My success or failure in teaching students is due primarily to factors beyond my control rather than to my own efforts and ability (Reversed) (TQ16D)	
	• I sometimes feel it is a waste of time to try to do my best as a teacher (Reversed) (TQ20G)	
	• I am certain I am making a difference in the lives of my students (TQ20H)	
	• To what extent do you feel that you have been successful in providing the kind of education you would like to provide for students in the target class (TQ10)	
	• The attitudes and habits my students bring to my class greatly reduce their chances for academic success (Reversed)	
	• To what extent do you feel that you have been successful in providing the kind of education you would like to provide for students in the target class.	
Professional Community Index		.69
(1) Shared Sense of Purpose		.74
	• Most of my colleagues share my beliefs and values about what the central mission of the school should be (TQ22B)	
	• Goals and priorities for the school are clear (TQ22C)	
	• In this school the teachers and the administration are in close agreement on school discipline policy (TQ22F)	
(2) Collaborative Activity		.83
	• How often since the beginning of the current school year did you receive useful suggestions for curriculum materials from colleagues in your department (TQ27B)	
	• How often ... did you receive useful suggestions for teaching techniques or student activities from colleagues in your department (TQ27C)	
	• There is a great deal of cooperative effort among staff members (TQ22G)	

Construct	Components	Cronbach's Alpha
	• I make a conscious effort to coordinate the content of my courses with other teachers (TQ22H)	
(3)		.83
	• In a typical planning period when you meet with other teachers, about how much time is spent [on coordinating content]? Teachers decide common themes, suggest related materials and activities to guide instruction (TQ31B)	
	• Since the beginning of the current school year, about how much time per month have you spent meeting with other teachers on lesson planning, curriculum development, guidance and counseling, evaluation of programs, or other collaborative work related to instruction (TQ29)	
	• Do you participate in a regularly scheduled planning period with other teachers (TQ30)	
(3) Collective Responsibility		.53
	• In this school, are you likely to experience the following consequence as a direct result of your students' academic success or failure: Public recognition in meetings of the faculty or the larger school community, in school publications, or in the mass media and press (TQ19F)	
	• I feel responsible for the students I teach, but not for other students in the school (Reversed) (TQ16F)	
	• Staff members are recognized for a job well done (TQ20A)	
	• Teachers are expected to help maintain discipline in the entire school, not just their classroom (TQ22E)	
	• You can count on most staff members to help out anywhere, anytime -- even though it may not be part of their official assignment (TQ22A)	
(4) Collective Focus on Student Learning		NA
	• [Importance to your teaching as a goal for your students] Academic excellence or mastery of the subject matter of the course (TQ14B)	
(5) Deprivatized Practice		.62
	• How often do two or more teaching colleagues regularly observe your students' academic performance, or review their grades or test scores (TQ18A)	

Construct	Components	Cronbach's Alpha
	• Except for monitoring student teachers or substitute teachers, how often have you visited another teacher's classroom to observe and discuss their teaching since the beginning of the current school year (TQ24)	
	• Since the beginning of the current school year, how often has another teacher come to your classroom to observe your teaching (exclude visits by student teachers or those required for formal evaluations (TQ26)	
	• How often since the beginning of the current school year did you receive meaningful feedback on your performance from supervisors or peers (TQ27A)	
(6) Reflective Dialogue		.68
	• In a typical planning period when you meet with other teachers, about how much time is spent [on diagnosing individual students]? Teachers discuss problems of specific students and arrange appropriate help (TQ31D1)	
	• In a typical planning period when you meet with other teachers, about how much time is spent [on analyzing teaching]? Teachers discuss specific teaching practices and behaviors of team members (TQ31C1)	
	• How often since the beginning of the current school year did you meet with colleagues to discuss specific teaching behaviors (TQ27D)	
Structural Conditions for Professional Community		
Size		
	• Number of students enrolled in the school (School Profile)	
Staffing Complexity		
	• Proportion of teachers reporting they teach academic subjects (i.e., English, social studies, math, science) (TQ45)	
Time to Meet and Talk		.68
	• Do you participate in a regularly scheduled planning period with teachers (TQ30)	

Construct	Components	Cronbach's Alpha
	• How often do you meet with other teachers for a planning period (TQ30B)	
Time Spent on Governance		
	• Hours outside of class spent on committee work related to school or department governance (TQ36G)	
Empowerment Index		.89
(1) Student Policy		.69
	• How much influence do teachers have over ... determining student behavior codes (TQ21A)	
	• How much influence do teachers have over ... setting policy on grouping students in class by ability (TQ21C)	
	• How much control do you feel you have in your target class over ... disciplining students (TQ9D)	
(2) School Policy		.85
	• How much influence do teachers have over ... determining the content of in-service programs (TQ21B)	
	• How much influence do teachers have over ... planning school building budgets (TQ21G)	
	• How much influence do teachers have over ... determining specific professional and teaching assignments (TQ21H)	
	• **How much influence do teachers have over ... establishing the school curriculum (TQ21D)**	.71
	• How much influence do teachers have over ... determining the school schedule (including teacher prep periods (TQ21E)	
	• How much influence do teachers have over ... hiring new professional personnel (TQ21F)	
	• How much control do you feel you have in your target class over ... selecting textbooks and other instructional materials (TQ9A)	
(3) Shared Decision Making		.85
	• Staff are involved in making decisions that affect them (TQ20B)	

Construct	Components	Cronbach's Alpha
	• I have influence on the decisions within the school which directly affect me (TQ20F)	
<u>Human and Social Resources</u>		
Supportive Leadership		.75
	• The school administration's behavior toward the staff is supportive and encouraging (TQ20C)	
	• The principal is interested in innovation and new ideas (TQ37F)	
	• Influence of the current principal on restructuring (TQ40E)	
Respect		.79
	• I feel accepted and respected as a colleague by most staff members (TQ22D)	
	• To what extent do you feel respected as a teacher by other teachers (TQ23A)	
	• ...by your department chair (TQ23B)	
	• ...your principal (or equivalent) (TQ23C)	
	• ...your district office (TQ23D)	
	• ...students' parents (TQ23E)	
	• ...your students (TQ23F)	
	• ...this community (TQ23G)	
Openness to Innovation		.69
	• Teachers in this school are continually learning and seeking new ideas (TQ22K)	
	• In this school I am encouraged to experiment with my teaching (TQ22J)	
Feedback from Parents and Colleagues		.62
	In this school, are you likely to experience any of the following consequences as a direct result of your students' academic success or failure?	
	• ...Written congratulations or reprimand (TQ19D)	
	• ...Oral congratulations or reprimand (TQ19E)	
	• ...Approval or disapproval from parents (TQ19G)	

Construct	Components	Cronbach's Alpha
Staff Development		.49
	• Most of the inservice programs I attended this school year dealt with issues specific to the needs and concerns of this school's students or staff (TQ25A)	.76
	• Staff development programs in this school permit me to acquire important new knowledge and skills (TQ25B)	
.....		
	• Time spent attending professional development activities required by the district (TQ28A)	.36
	• Time spent attending professional development activities developed by the school (TQ28B)	

APPENDIX B

Analysis stage one. We employ the unconditional HLM model as a oneway analysis of variance with random effects to estimate the within- and between-school variance in teacher professional community. The combined HLM model for this analysis may be represented as follows:

$$Y_{ij} = \gamma_{00} + U_{0j} + r_{ij}$$

with Y_{ij} the level of professional community for individual i in school j; γ_{00} the grand mean; U_{0j}, the school effect; and r_{ij}, the individual effect. According to this model, the variance of the outcome is:

$$Var(Y_{ij}) = Var(U_{0j} + r_{ij}) = \tau_{00} + \sigma^2$$

with τ representing the between-school variability and σ^2 representing the within-school variability.

We then conduct the series of analyses examining the relationship of school structural, relational, and contextual features to teacher professional community. The within-school (level one) model for this analysis, containing no individual predictors, is:

$$Y_{ij} = \beta_{0j} + r_{ij}$$

with β_{0j} the mean for school j and r_{ij} the within-school error, assumed to be normally distributed $(0,\sigma^2)$.

The between school (level two) model is:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}W_j + U_{0j}$$

with W_j representing a between-school predictor, e.g, a structural condition or a human resource.

The combined model, adjusting for within-school or level-one differences, is:

$$Y_{ij} = \gamma_{00} + \gamma_{01}W_j + U_{0j} + r_{ij},$$

with the random variable U_{0j} here representing a residual effect:

$$U_{0j} = \beta_{0j} - \gamma_{00} - \gamma_{01}W_j.$$

Analysis stage two. In this second analysis we employ a full HLM model. The within-school or level one model investigates the sense of efficacy for teacher i in school j, Y_{ij}, as a function of background predictors X_{ij}s (e.g., gender, age, minority status, academic faculty status, SES, and the individual's level of satisfaction in teaching at his or her present school).

$$Y_{ij} = \beta_{0j} + \beta_{1j}X_{1ij} + \beta_{2j}X_{2ij} + \ldots + B_{jk}X_{ijk} + r_{ij}$$

β_{0j} indicates the average level of efficacy for teachers in school j. The β_{jk} regression coefficients represent the relationship of efficacy to the measured characteristics of teachers within school j. In this model, because the relationship of the measured characteristics of teachers to efficacy did not vary significantly between schools, the parameters are fixed, i.e., set to 0, rather than allowed to vary randomly between schools.

The final between-school model contains two predictors of efficacy, the gender composition of schools and the teacher professional community index:

$$\beta_{jk} = \gamma_{00} + \gamma_{01}W_{1j} + \gamma_{02}W_{2j} + U_{0j}.$$